

### REMARKS

The foregoing amendments are made to more thoroughly define the subject matter Applicants regard as their invention. Support for the limitations in these amendments can be found in the original claims.

The rejection of the claims as obvious over the Paskell, Hummel and Barefoot patents is respectfully traversed. MPEP §§ 2143 & 2143.03 make clear that in order to establish a prima facie case of obviousness, the prior art must disclose or suggest **all** features of the invention being claimed. In this case, the references cited by the Examiner fail to establish a prima facie case of obvious because they fail to disclose or suggest

- (1) the very existence of duplex stainless steels, and
- (2) welding with a non-pulsed electrical arc.

To remedy the first of these deficiencies the Examiner asserts that, because duplex stainless steels are a subset of stainless steels, they are fairly taught by the references which disclose stainless steels generally. However, a fundamental principle of patent law is that the disclosure of a genus does not constitute a disclosure of a subgenus or species within that genus. *See, Ex parte A*, 17 U.S.P.Q.2d 1716 (Bd. Pat. App. & Inter. 1990) as well as the last section of MPEP §2131.02. Accordingly, it does not follow that the cited prior art references fairly disclose duplex stainless steels merely because they disclose stainless steels generally.

To remedy the second of the above deficiencies, the Examiner asserts that

“it is well known in the art that for a quality product the electrode currents and subsequently the arc must be run in a continuous type fashion during welding.”

However, 35 U.S.C. §103 is clear that obviousness is determined against the background of the **prior art**, not the unsupported assertions of a patent examiner. In this regard, MPEP §2144.03 makes clear that an examiner need not provide documentary proof for an assertion of fact only where that fact is so notoriously well known that judicial notice can be taken of it. In this case, the above assertion is broad, nebulous and completely lacking in context and hence not the proper subject matter for judicial notice. Therefore, Applicants specifically traverse this assertion and request the Examiner to cite a specific reference showing this assertion is true. Until that time, there is absolutely no basis for the Examiner to conclude that continuously running arcs are known in the art to provide “quality products,” as she has done.

Duplex stainless steels represent a small subset of stainless steels. They are unique because they exhibit both an austenitic and a ferritic phase structure, as opposed to most other stainless steels which exhibit only one phase structure. When duplex stainless steels are welded, it is almost impossible to maintain this dual phase structure in the weld produced, because phase structure is sensitive to heat and welding inherently involves heating. In accordance with the present invention, however, Applicants discovered that, in the welding of duplex stainless steel **tubes**, this problem could be avoided and high quality welds maintaining the desired duplex phase structure could be reliably and consistently produced if

- the tubes were welded by **single pass orbital welding**,
- a **high refractory flux** were used as a welding aid, and
- welding was accomplished with a **non-pulsed arc**.

To say that this discovery is obvious in view of the Paskell, Hummel and Barefoot references seems to defy common sense, since these references in the aggregate fail to disclose

- the very existence of duplex stainless steels,

- the problem faced and solved by the present invention, i.e., that the duplex structure of such stainless steels cannot be maintained when they are welded, and
- non-pulsed arc welding.

As indicated at the bottom of page 7 of the specification, orbital welding of tubes is typically done using pulsed electrical arcs, because they are easier to regulate and thereby control the heat at the weld zone. Accordingly, a person of ordinary skill in the art who was desirous of maintaining the phase structure of duplex stainless steels tubes being welded, if anything, would have chosen a pulsed electrical arc for this purpose since the heat applied and hence the phase structure obtained could be more easily controlled. Accordingly, Applicants' decision to reject pulsed electrical arcs and use non-pulsed arcs instead represents a clearly unobvious departure from the prior art, Applicants believe.

The Federal Circuit has made clear that to support a case of prima facie obviousness based on a combination of prior art references, the references themselves must provide some suggestion or motivation to make the modifications necessary to achieve the combination being claimed. *See, In re Sang Su Lee*, 277 F.3d 1778 (Fed. Cir. 2002) and the cases cited therein. In this case, not only does the cited prior art fail to disclose the very existence of non-pulsed arc welding, and not only does the cited prior art fail to disclose the very existence of duplex stainless steels, but in addition it also clearly fails to provide any reason why one of ordinary skill in the art would reject pulsed electrical arcs and select not pulsed arcs instead for welding such steels. Accordingly, it is clear that the motivation to combine the references as done in this rejection has come from a hindsight reconstruction of the prior art using Applicants' own specification as a guide and not an impartial assessment of what these references fairly teach.

In accordance with the present invention, Applicants use

- single pass orbital welding,
- a high refractory flux, and
- a non-pulsed electric arc

to maintain the desired duplex phase structure of duplex stainless steel when tubes made from such a steel are welded together. Neither this combination of features nor the result achieved thereby are fairly suggested in the references, and hence they fail to reasonably suggest the present invention in the sense of 35 U.S.C. §103. Accordingly, withdrawal of the rejections and early issuance of a notice of allowance are earnestly solicited.

Respectfully submitted,



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